## IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Claim 1 (Previously Presented):** An inverter apparatus for converting a DC power converted from an input AC power to an output AC power of a variable frequency and a variable electric power to drive an induction motor at a variable speed, comprising:

a rectifying unit for converting said input AC power to said DC power, a filter capacitor for smoothing a DC output of said rectifying unit, an inverter unit having an input connected across said filter capacitor, an input current detector for detecting an input current to said inverter unit and a gate circuitry for driving said inverter unit;

an excitation current detection unit for detecting an excitation current of said induction motor from an output signal of said input current detector, a gate signal for driving said gate circuitry and a reference phase command;

a setting unit for setting a limitation level of said excitation current;

a torque boost voltage command unit for producing a torque boost voltage command according to an inverter frequency command; and

a torque boost voltage compensation unit for changing said torque boost voltage command so that said detected excitation current value is smaller than or equal to said limitation level;

wherein said torque boost voltage compensation unit outputs a torque boost voltage compensation, a quantity of which is within a predetermined range.

**Claim 2 (Original):** An inverter apparatus according to Claim 1, wherein said torque boost voltage compensation unit includes a limiter processing unit and inverts said torque boost voltage command, said inverted torque boost voltage command being limiter-processed as a lower limiter value of said limiter processing unit to produce a compensation value of said torque boost voltage command.

**Claim 3 (Original):** An inverter apparatus according to claim 1, wherein said excitation current detection unit uses an output voltage phase of said inverter apparatus to detect an equivalent of said excitation current by calculation based on said detected motor current value.

**Claim 4 (Original):** An inverter apparatus according to claim 1, wherein said excitation current detection unit uses an output voltage phase of said inverter apparatus to detect an equivalent of said excitation current by calculation based on a DC input current of said inverter apparatus.

**Claim 5 (Original):** An inverter apparatus according to Claim 1, wherein a motor current which is a no-load current is limited substantially to an excitation current limitation level when said torque boost voltage command is increased gradually in a state that said induction motor is being operated in no load.

**Claim 6 (Original):** An inverter apparatus according to Claim 1, wherein an inverter output voltage is controlled to be substantially constant after the

time when a motor current which is a no-load current reaches substantially an excitation current limitation level when said torque boost voltage command is increased gradually in the state that said induction motor is being operated in no load.

**Claim 7 (Previously Presented):** An inverter apparatus, comprising:

a conversion unit to convert an input AC power to a DC power;

an inverter unit arranged to convert the DC power into an output AC power having a variable frequency and a variable electric power to drive an inductor motor at a variable speed;

an excitation current detection unit coupled to detect an excitation current of said induction motor; and

an inverter control circuit arranged to control the variable frequency and the variable electric power of the AC power outputted from the inverter unit, said inverter control circuit comprising:

a setting unit for setting a limitation level of the excitation current;

a torque boost voltage control unit for producing a torque boost voltage according to an inverter frequency command, and for compensating the torque boost voltage so that the excitation current becomes no greater than the limiting level;

an integrator arranged to integrate the inverter frequency command to produce a reference phase command;

a three-phase converter arranged to generate three-phase voltage commands for a fixed coordinate axis according to coordinate axis components of the compensated torque boost voltage, an induced voltage command and the reference phase command;

a gate signal generator arranged to prepare gate signals according to the three-phase voltage commands; and

a gate circuit arranged to drive the inverter unit according to the gate signals.

**Claim 8 (Previously Presented):** An inverter apparatus according to Claim 7, wherein the torque boost voltage control unit includes a limiter processing unit arranged to process an invert of the torque boost voltage as a lower limiter value so as to generate the compensated torque boost voltage.

**Claim 9 (Previously Presented):** An inverter apparatus according to Claim 7, wherein a no-load motor current is limited substantially to an excitation current limitation level when the torque boost voltage is increased gradually in the state that the induction motor is being operated in no load.

**Claim 10 (Previously Presented):** An inverter apparatus according to Claim 7, wherein an inverter output voltage is controlled to be substantially constant after the time when a no-load motor current reaches substantially an excitation current limitation level when the torque boost voltage is increased gradually in the state that the induction motor is being operated in no load.

**Claim 11 (Canceled):**

**Claim 12 (Currently Amended):** An inverter apparatus comprising:

a conversion unit to convert an input AC power to a DC power;

an inverter unit arranged to convert the DC power into an output AC power having a variable frequency and a variable electric power to drive an inductor motor at a variable speed;

an excitation current detection unit coupled to detect an excitation current of said induction motor; and

an inverter control circuit arranged to control the variable frequency and the variable electric power of the AC power outputted from the inverter unit,

wherein said inverter control circuit comprises:

a setting unit for setting a limitation level of the excitation current; and

a torque boost voltage control unit for producing a torque boost voltage according to an inverter frequency command, and for compensating the torque boost voltage so that the excitation current becomes no greater than the limiting level; and

wherein the excitation current detection unit comprises:

a signal preparation circuit including a series of logical AND gates and logical OR gates arranged to prepare ~~the gate~~sample-and-hold signals;

sample-and-hold circuits arranged to sample and hold ~~the gate signals~~an inverter input current on the basis of the sample-and-hold signals prepared from the signal preparation circuit; and

an arithmetic circuit arranged to perform a predetermined calculation of sampled signals ~~on the basis of the three-phase voltage commands~~ generated from the sample-and-hold circuits.

**Claim 13 (Previously Presented):** An inverter apparatus according to Claim 12, wherein the inverter control circuit further comprises:

an integrator arranged to integrate the inverter frequency command to produce a reference phase command;

a three-phase converter arranged to generate three-phase voltage commands for a fixed coordinate axis according to coordinate axis components of the compensated torque boost voltage, an induced voltage command and the reference phase command;

a gate signal generator arranged to prepare gate signals according to the three-phase voltage commands; and

a gate circuit arranged to drive the inverter unit according to the gate signals.